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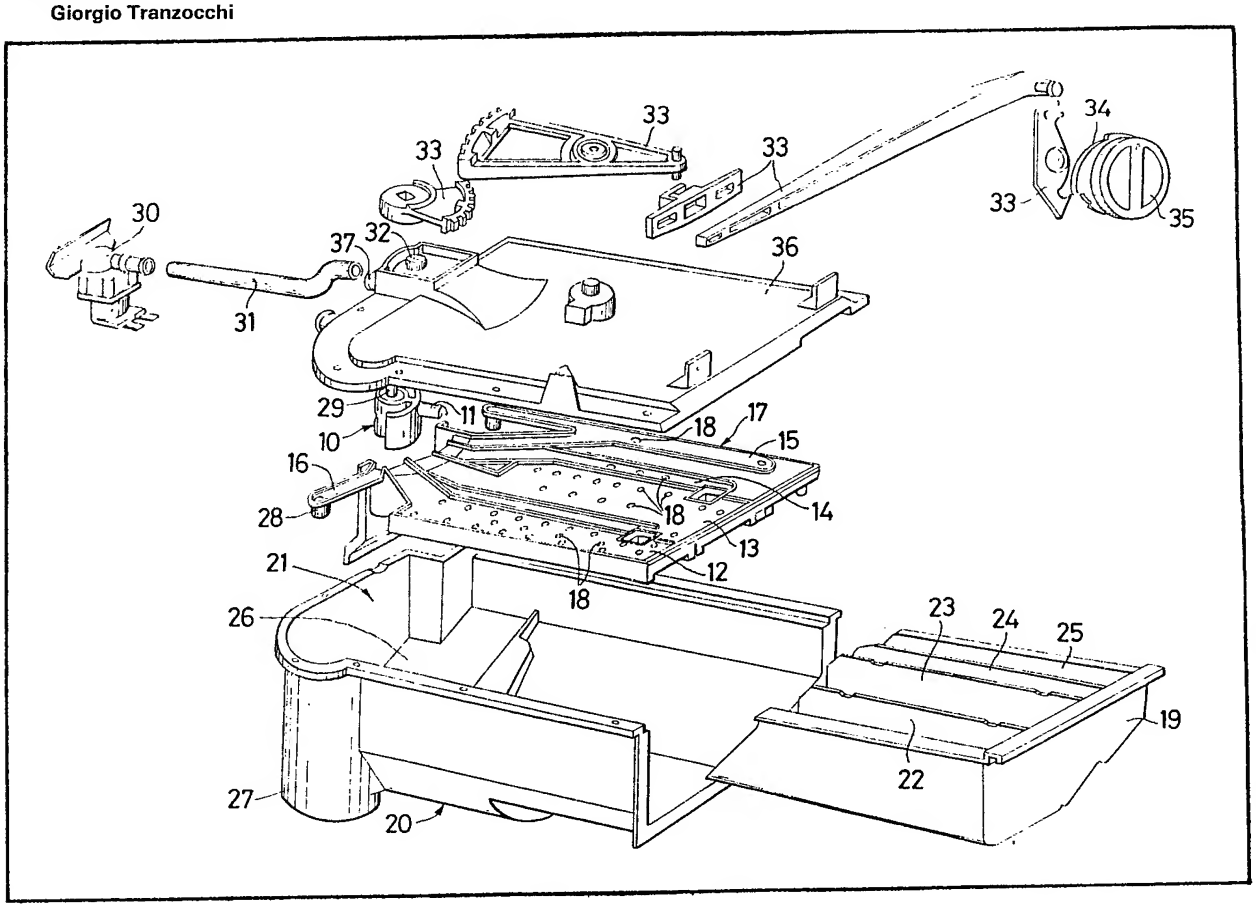
(54) Unit for feeding wash liquid into a washing machine tub

(57) A unit for feeding wash liquid to a washing machine tub, comprises a distributor for selectively distributing water either to a direct inlet 16 to the tub or to one of several compartments 22, 23, 24, 25 of a drawer 19 which lead to a header communicating with the tub, each of which is arranged to contain one wash substance. Channels 12, 13, 14, 15 are provided in a plate 17 which overlies the compartments 22, 23, 24, 25 when the drawer 19 is closed. A nozzle 11, carried by a rotary element 10 controlled by a cam 34, selectively feeds water to one of the five channels 12, 13, 14, 15, 16. In use, water is fed initially into the tub through the channel 16 to partly fill the tub before detergent is fed thereinto.



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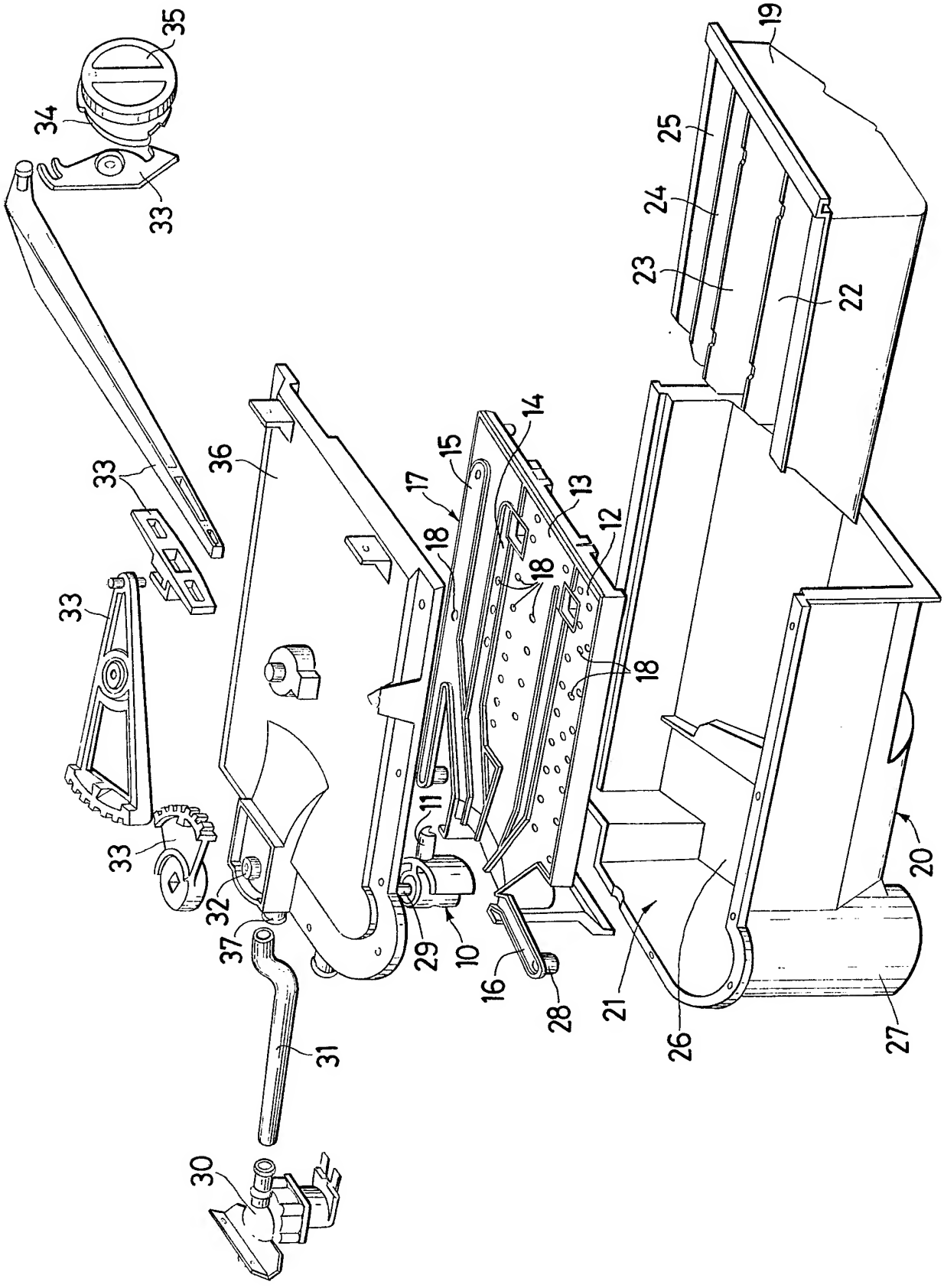
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SPECIFICATION

Unit for feeding selected wash liquid into a washing machine tub

This invention relates to an advantageous unit for feeding selected wash liquid into a washing machine tub.

Known units used up to the present time for feeding selected wash liquid into a washing machine tub present drawbacks. In this respect, when the detergent powder present in the detergent drawer of the unit is removed by the water and fed into the tub, it deposits on the tub base. In this manner, part of the detergent is lost at the mouth of the liquid intake pipe, with the risk of blocking this latter. The rest of the detergent dissolves normally in the water to form a wash liquid, which however obviously has low cleaning capacity. A similar argument can be applied to the other powder substances (softener, bleach etc.) used in the washing of laundry by means of a washing machine.

The object of the present invention is to obviate the aforesaid drawbacks of the known art by providing a unit for feeding a washing machine tub with selected wash liquid, which allows the utilisation of the powder or liquid substances used in the wash process to be optimised.

This object is attained by a unit for feeding selected wash liquid into a washing machine tub, characterised by comprising a distributor for selectively distributing water either to a direct inlet to the tub or to one of several compartments of a drawer which lead into a header communicating with said tub, each of said compartments being arranged to contain one wash substance.

The characteristics and advantages of the present invention will be apparent from the description of an embodiment thereof given hereinafter with reference to the accompanying drawing, of which the single figure represents an exploded perspective view of the unit according to the invention.

By way of non-limiting example, a unit according to the invention comprises essentially a rotating element 10 carrying a nozzle 11 which, depending on its angular position, selectively feeds water either to one of four channels 12, 13, 14, 15 of a plate 17 which is perforated in its base with holes 18, or to a lateral channel 16 which comprises a water outlet port 28 and is formed in a single piece with the plate 17.

The plate 17 lies above a drawer 19 comprising compartments 22, 23, 24 and 25 in positions corresponding with the channels 12, 13, 14 and 15 respectively.

The drawer 19 is housed in a tray 20 which comprises a collection portion or header 21 into which the compartments 22, 23, 24 and 25 lead, and which has its base 26 inclined towards a discharge portion 27 communicating with a washing machine tub, not shown.

The outlet port 28 opens directly into the discharge portion 27.

The nozzle 11 receives water through a tube 29 fixed to the element 10 and connected to a tube 31 which itself is connected to the mains water supply by way of a solenoid water shut-off valve 30. The connection between the tube 31 and tube 29 is made by a rotary joint, which is not shown because of known type.

At this connection, the head 32 of the rotating shaft, which is rigidly connected to the element 10, is operated by way of a series of linkages 33 from a can 34 rotating with the knob 35 of the washing machine programmer.

The tray 20, together with the drawer 19 and its overlying plate 17, is closed upperly by a backing plate 36.

The head 32 and a connector 37 for connecting the tube 31 are disposed above said backing plate 36.

By suitably shaping the profile of the cam 34, the nozzle 11 can be made to rotate into a position corresponding with the channel 16 before it moves into positions corresponding with one of the channels 12, 13, 14, 15.

During operation, the compartments of the drawer 19 are filled with suitable powder substances, such as a prewash detergent in the compartment 22, a wash detergent in the compartment 23, and softeners and bleaches in the compartments 24 and 25.

If for example the prewash detergent is to be fed into the tub, the nozzle 11 is firstly moved into a position corresponding with the channel 16 under the control of the knob 35, as stated. The valve 30 is then opened and the water flows from the nozzle 11 along the channel 16 and through the port 28 and portion 27 to directly reach the tub. When the water has partly filled the tub, the solenoid valve 30 closes. At this point, the nozzle 11 rotates, again under the control of the knob 35, into a postion corresponding with the channel 12. The solenoid valve 30 reopens and the water flows from the nozzle 11 along the channel 12 from which it flows through the holes 18 of this latter and into the compartment 22. The prewash detergent contained therein is removed by the water and entrained into the tub by way of the portion 27. The mixture comprising the water and prewash detergent thus fails into the initially fed water and fills the tub.

The aforesaid initial water feed prevents prewash detergent depositing on the base of the tub at the mouth of the liquid intake pipe, which could lead to the consequences already stated in the introduction.

An initial water feed is made into the tub in a similar manner before removing the powder substances contained in the other compartments 23, 24 and 25.

A unit which is constructed and operating as heretofore described therefore enables the wash powders to be completely utilised.

The programmer is not described in detail herein as it is well known to the expert of the art.

It is apparent that modifications and/or

additions can be made to the present embodiment.

In particular, the shape and number of components of the unit can be suitably varied according to the various requirements. In addition, the elements 33 can be replaced by kinematically equivalent elements.

Finally, the direct water inlet can be attained by directly connecting the discharge portion 27 to the mains water supply by a tube containing a second solenoid valve. In this case, the lateral channel 16 is dispensed with and the rotary element 10 feeds water only to the four channels 12, 13, 14 and 15. Modifications would then be necessary to the programming device both in order to limit the angular excursion of the element 10 and in order to cause the two solenoid valves to operate in a suitable sequence. These modifications are not described herein as they are also within the scope of an expert of the art.

Claims

1. A unit for feeding selected wash liquid into a washing machine tub, characterized by comprising a distributor for selectively distributing water either to a direct inlet to the tub or to one of a plurality of compartments of a drawer which lead into a header communicating with said tub, each of said compartments being adapted to contain a wash substance.

2. A unit as claimed in Claim 1, characterized in that said selective water distributor comprises a rotary element linked to programmer means and carrying a nozzle for selectively feeding water to said direct inlet to the tub or to one of said compartments of said drawer.

3. A unit as claimed in Claim 2, characterized in that said drawer is surmounted by a plate comprising channels with a perforated base in positions corresponding to said compartments, and further comprising a channel which opens directly into an outlet portion of said header, all said channels being selectively fed by said nozzle.

4. A unit as claimed in Claim 2, characterized in that said rotary element is linked to a cam of the washing machine programmer knob.

5. A wash liquid feeding unit for a washing machine tub, substantially as hereinbefore described with reference to the accompanying drawing.

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